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## **HEALTH AND SAFETY PLAN SLUDGE REMOVAL AND WASTE SOLIDIFICATION EBR-II Leach Pit - Operable Unit 9-02**

**Argonne National Laboratory - West  
INEL, Idaho Falls, Idaho  
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Document Number W7630-0003-ES-00

HEALTH AND SAFETY PLAN

FOR

SLUDGE REMOVAL AND WASTE SOLIDIFICATION  
EBR-II Leach Pit - Operable Unit 9-02

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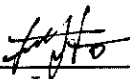
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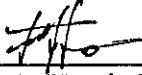
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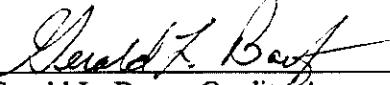
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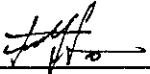
EBR-II Leach Pit - Operable Unit 9-02

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## **1.0 General Information**

### **1.1 Introduction**

The Health and Safety plan establishes the procedures and requirements that ETAS Corporation will employ to minimize health and safety risks to its employees and its subcontractor(s) working at the EBR-II Leach Pit on activities related to sludge removal and solidification. It addresses safety issues related to construction, hazardous waste operations, and radiological control. All on site activities will be performed in compliance with the safety regulations published in 29 Code of Federal Regulations (CFR) Part 1926 and the applicable sections of Part 1910.

Personal whole body scans shall be performed both before and after the completion of the project to assess the potential internal uptake of radionuclides of the on-site workers. Personnel radiological monitoring devices shall be used to assess the radiological exposure during the performance of the jobs. In accordance with 29 CFR 1910.120 (e) all on-site workers shall have completed, at a minimum, an Occupational Safety and Health (OSHA) 40 hour (off-site) course for Health and Safety Training for Hazardous Waste Operations, a Radiation Worker II course, and respirator training. All on-site workers will have completed an ETAS Corporation approved medical examination to ensure that they are physically fit to perform the radiological and hazardous waste field operations while wearing a respirator. All on-site management and supervisors shall have completed at least eight additional hours of specialized training on such topics as, but not limited to, the health and safety plan, personal protective equipment and health hazard monitoring procedures and techniques.

ANL-W shall provide ETAS and its subcontractors with the necessary site-specific training required for this site. All incidental visitors who desire access to an on-site control area shall

demonstrate a minimum of 24 hours of off-site instruction and a minimum of one day actual field experience in accordance with 29 CFR 1910.120 (e)(3)(ii).

This report is structured into six sections. The first section provides general information pertinent to the development of this Health and Safety plan. The safety concerns and procedures associated with the construction, hazardous waste operations and radiological control are addressed in Sections 2, 3 and 4 respectively. Section 5 addresses the implementation of the Health and Safety plan. Emergency response actions are described in Section 6.

## **1.2 Site Location**

The Idaho National Engineering Laboratory (INEL) is a security area of approximately 890 square miles located on the eastern Snake River Plain of southeastern Idaho (see Figure 1). The INEL was established in 1949 and is currently used by the United States Department of Energy (DOE) to test different types of nuclear reactors.

The Argonne National Laboratory - West (ANL-W) is located in the southeastern portion of the INEL. Figure 1 shows the location of the INEL in Idaho and the location of the ANL-W within the INEL site. The ANL-W complex is a nuclear research facility in support of the breeder reactor program conducted by the U.S. Department of Energy (DOE). Figure 2 shows a plan of the facility. The facility houses five nuclear reactors, including the Experimental Breeder Reactor II (EBR-II), the Hot Fuel Examination Facility for the disassembly, inspection and reassembly of irradiated reactor fuel, the Fuel Cycle Facility for the processing of spent fuel and a laboratory and office support building.

The EBR-II leach pit is located between the inner and outer security fences in the southwest corner of the ANL-W facility (see Figure 2).

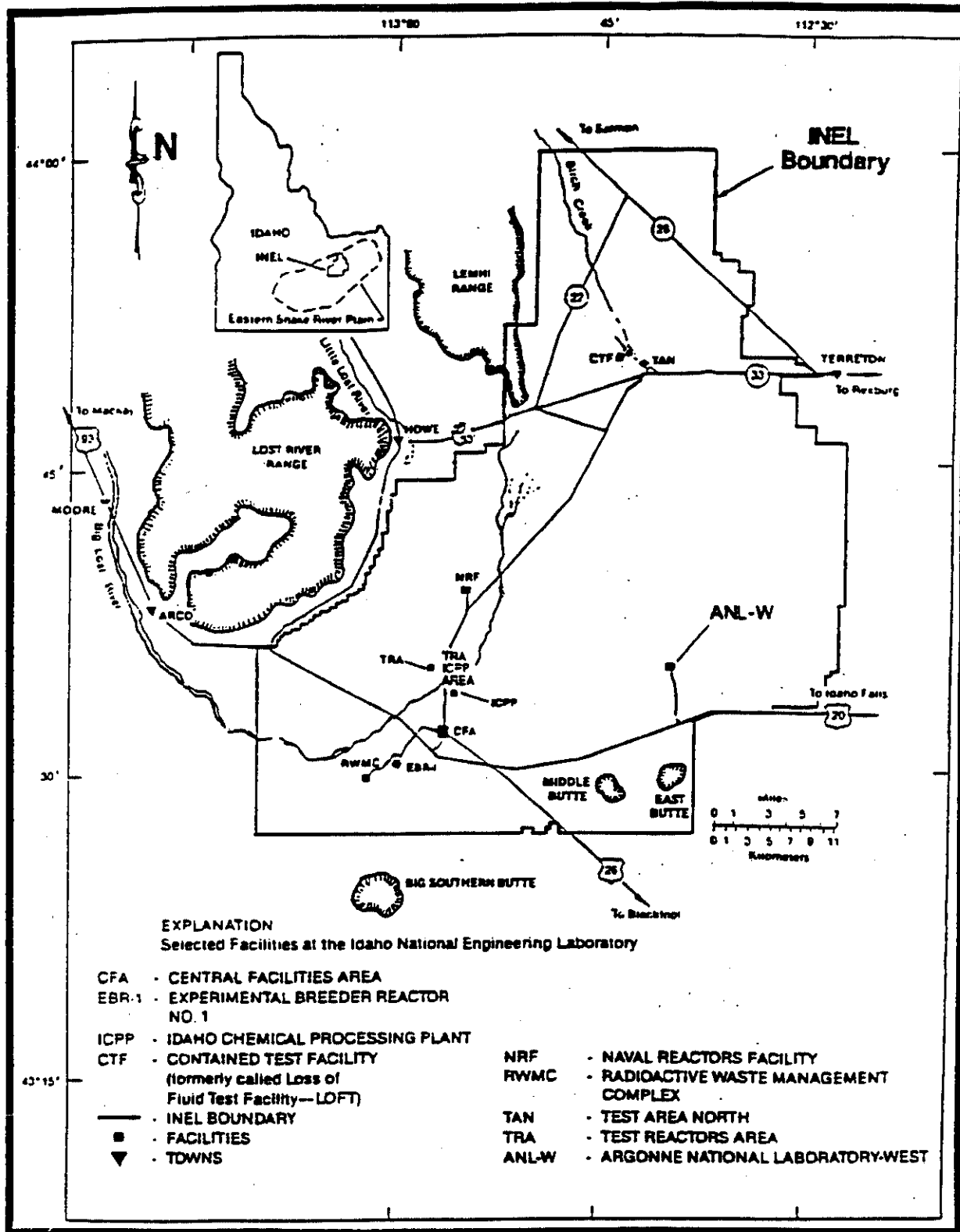


Figure 1. INEL Site Map (ANL-W, 1993)



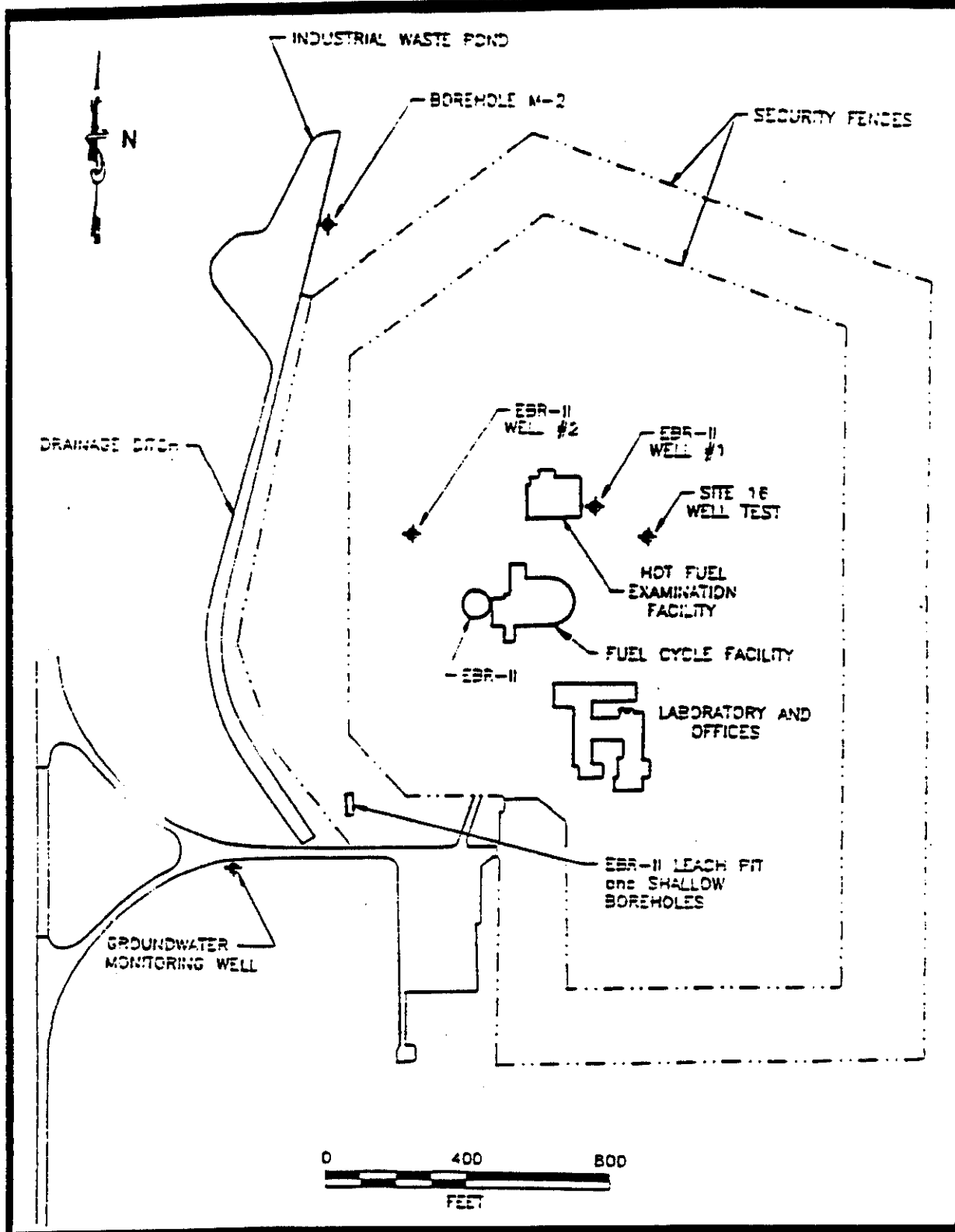


Figure 2. ANL-W Facility Plan and EBR-II Leach Pit Location (ANL-W, 1993)

### **1.3 Physical Setting of Leach Pit**

The leach pit is an irregularly shaped, unlined, underground basin approximately 18 ft. wide by 40 ft long by 10 ft. deep (from the lid down), as shown in Figures 3 and 4. The leach pit was excavated into basalt bedrock in 1959 with explosives. An 8-in thick reinforced concrete slab covers the pit and is intended to shelter it from the weather and prevent wildlife ingress. Access to the pit is possible through a manhole. (Ref. 1).

### **1.4 Field Construction and Sampling Activities**

Field activities shall involve sludge removal, demolition of the entire concrete structure, solidification of the sludge using portland cement, painting the concrete to contain the radioactive contamination, waste handling, leach pit decontamination, and validation sampling. These activities, are discussed in detail in the Technical Work Plan (Ref. 2) and are listed below:

- Support Facilities Preparation
- Soil Excavation
- Sludge Removal
- Leach Pit Decontamination
- Waste Sludge Solidification
- Concrete Demolition and Removal
- Concrete and Waste Material Handling
- Liquid Waste Handling
- Temporary Waste Storage
- Equipment Decontamination
- Plug and Abandonment of Inlet Pipe
- Leach Pit Sampling and Analysis
- Solidified Sludge Sampling and Analysis

### **1.5 Construction, Hazardous Waste Operation and Radiological Hazards**

Potential construction hazards have been identified. These hazards are excavation and trenching, confined space entry, torch and saw cutting, hoisting and rigging, electrical, noise and temperature. The OSHA safety requirements for each of these operations are specified in

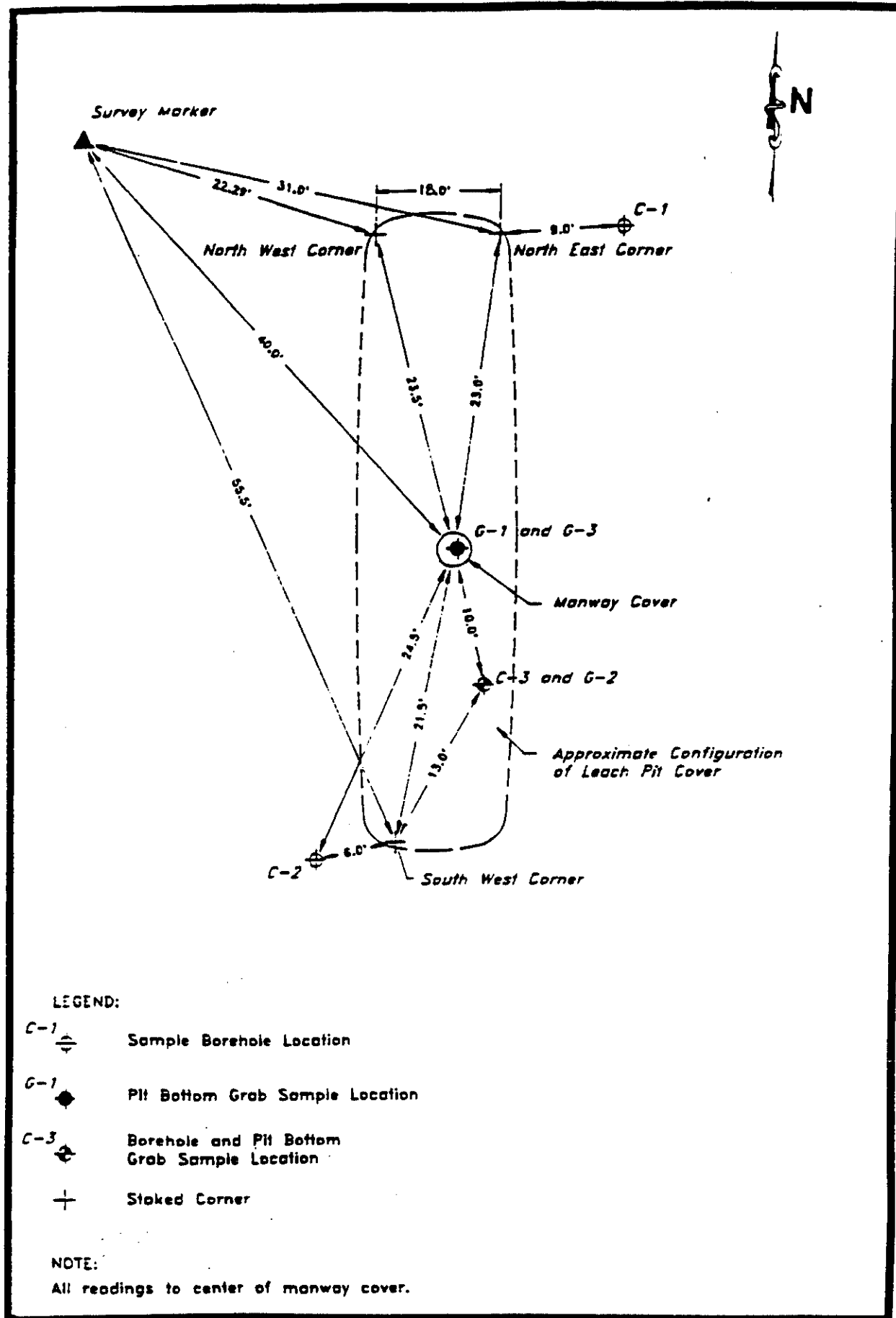


Figure 3. Configuration of EBR-II Leach Pit - Top View/ Sample Locations (ANL-W, 1993)

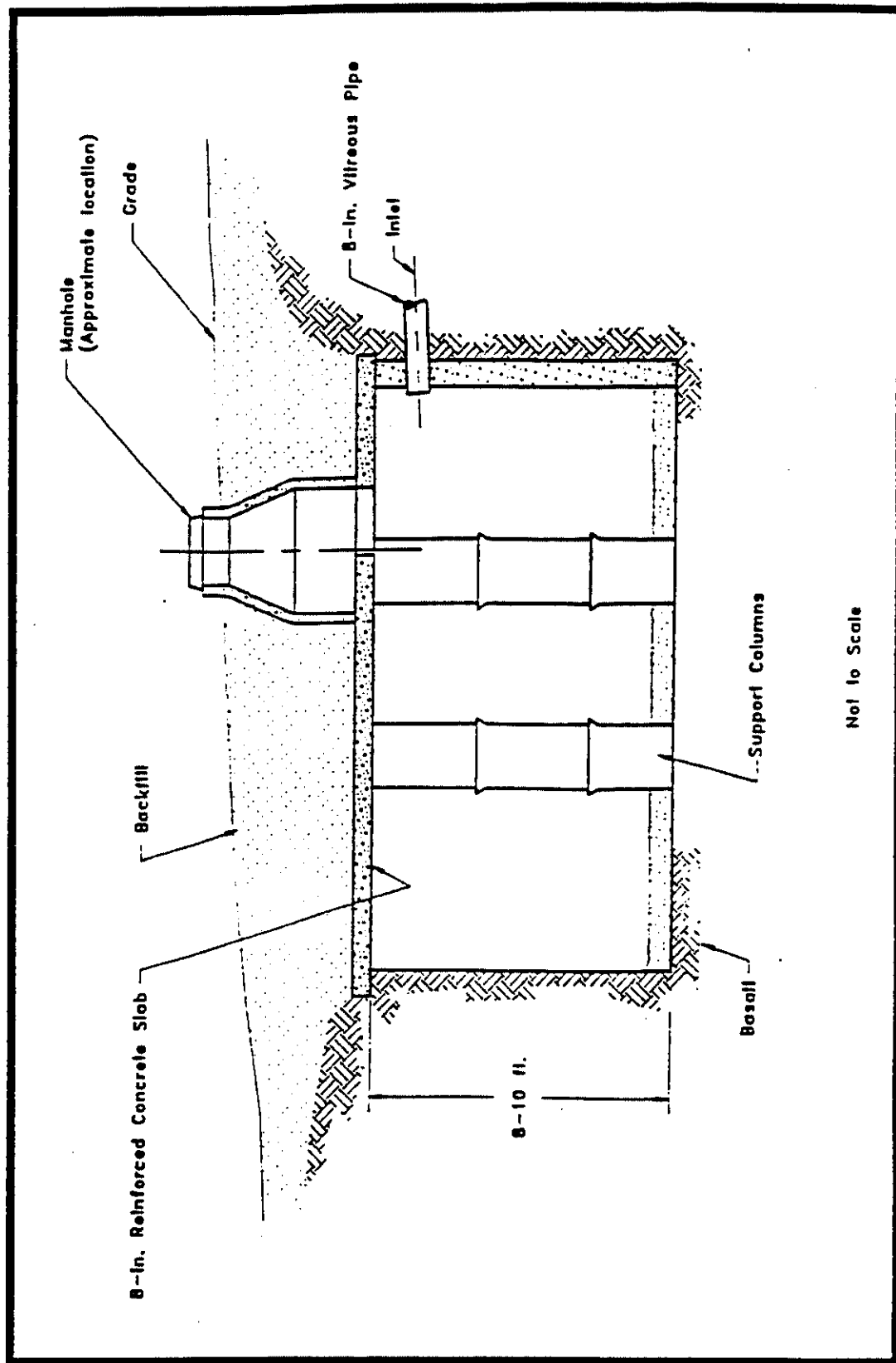


Figure 4. Configuration of EBR-II Leach Pit - Cross Sectional View (ANL-W, 1993)

Section 2 along with brief descriptions of our proposed safety procedures and methods for the minimization of such hazards.

Potential hazardous waste operation hazards, if any, will be related to the handling and the sampling of the sludge. According to the analytical results of the sludge provided in the Request for Proposal (RFP) specification document (Ref. 1), none of the volatile nor the semivolatile compounds exceed the regulatory limits for ingestion, inhalation or absorption concerns (Ref. 2). Three constituents, PCB, arsenic, and beryllium, exceed the regulatory limits. Total PCB levels in the sludge ranged from 3.3 to 7.9 milligrams per kilogram (mg/Kg), which exceed the threshold level of 0.74 mg/Kg (Ref. 2) for PCB in industrial soils. Arsenic concentrations in the sludge ranged from 3.52 to 52.80 mg/Kg. These levels exceed the threshold levels for industrial soils of 3.2 mg/Kg (Ref. 2). One pit sample recorded a beryllium level of 739 mg/Kg which is above the threshold level of 1.33 mg/Kg (Ref. 2). Volatilization of these three constituents is unlikely. However, they may pose potential hazards through inhalation, ingestion or absorption should these chemical constituents become air-borne as particulate material. Level C PPE, with a full-faced respirator and HEPA filter provides adequate protection from exposure to these three constituents. A personnel air monitoring program for these constituents, should it be required, is presented in Section 3.4.

Keeping the sludge moist will minimize the occurrence of air-borne contamination and minimize the chemical hazard associated with sludge handling. Exposure to the chemical hazard shall be further reduced by wearing Level C personal protection clothing and wearing a respirator, equipped with a HEPA filter. The personal protection equipment (PPE) is specified in Section 3.0.

Wet operations will also pose a risk to the workers. Wet operations will expose the worker to contamination exposure from spray mists, spillage and surface wetted during sludge handling

activities. Decontamination wash activities will pose another risk. Exposure to wet operations will occur during sludge removal, leach pit decontamination, waste sludge solidification and sampling operations. During these activities, exposure to wetness will be minimized by avoiding splashing activities and standing upwind from wet operations. The PPE for these activities will be modified to include water resistant Tyvek and/or wet suits.

Potential radiological hazards will also be related to the handling and the sampling of the sludge. According to the RFP specification (Ref. 1), the radiation levels, measured in 1974 inside the pit, ranged from 12 milliRems/hr (mR/hr) to 30 mR/hr at 6.5 feet below the pit cover. In 1990, radiation levels from the sludge in the bottom of the pit ranged from 15 to 30 mR/hr at waist level and from 20 to 60 mR/hr at 2 inches from the top of the sludge. If the workers are required to enter the leach pit prior to decontamination they may be exposed to a radiation dose ranging from 12 to 60 mR/hr. If the workers are not required to enter the leach pit, their radiation exposure level is expected to be much less.

Exposure to radioactive contamination may occur throughout the entire field operation. However, with the exception of the waste sludge solidification activity, most of the exposure will not involve the direct exposure to the sludge, unless a manned entry to the pit is required. A manned entry may be required to clean sludge from pit areas with limited access to surface directed water. During the waste sludge solidification activity, radiological exposure/dosage to personnel will be constantly monitored by the ANL-W Health Physics (HP) technician. With this procedure, personal exposure to contamination can be minimized by reducing the time of exposure, increasing the distance from the radiation source and by employing shielding. With the exception of support facilities setup, soil excavation and demobilization of support facilities, which can be performed with level D PPE, all field activities will require anti-contamination (anti-C) PPE with a full face respirator equipped with a HEPA filter. Level D PPE includes hardhat, safety glasses, steel tip boots, and hearing protection where appropriate. PPE requirements with respect to radiation are discussed in Section 4.

## **2.0 Construction Safety**

ETAS shall obtain a Safe Work Permit for excavation and trenching, torch and saw cutting, hoisting and rigging and confined space entry. ETAS shall submit a written request for such a permit to an ANL-W representative. The permit shall contain a reference to the contract, the date of work commencement and a description of the special risks, known to the contractor, associated with the activity.

### **2.1 Excavation and Trenching**

Excavation and trenching shall be performed in accordance with all pertinent OSHA requirements. Sloping and benching of the soil will be performed in accordance with Subpart p of 29 CFR 1926. The trackhoe shall be operated in accordance with Subpart O of 29 CFR 1926 and in accordance with 29 CFR 1926.651(j)(2), the trackhoe shall stay at least 5 feet from the excavated area. The excavation activities include a sloping plan with a 1.5 to 1 ratio, or as the competent construction person may determine. If shoring is deemed necessary, it shall be performed in accordance with 29 CFR 1926.652a. Per 29 CFR 1926.650, all excavation activities will be overseen by a foreman trained and experienced in excavation operations. The excavated area will be barricaded with standard saw horse type barricades. Yellow caution tape shall be used also. Barricades will be removed, temporarily, should the barricades cause an impediment to work being performed. ETAS Corporation does not anticipate encountering any underground utilities. The top soil is expected to contain neither hazardous nor radioactive materials.

### **2.2 Torch and Saw Cutting**

Concrete cutting will be required during removal of the concrete lid, manhole and riser, concrete columns and retaining wall. All electrical tools used during these operations will be operated in accordance with 29 CFR 1926.302. When applicable the electrical safety procedures described in Section 2.5 also apply to the operation of the electrical powered saw.

Should cutting of the rebar require torch cutting, this activity will be performed in compliance with Subpart J, 29 CFR 1926. ETAS shall not proceed with cutting work at the construction site without an approved "Welding, Cutting, Brazing, and Soldering Permit" (ANL Form RED 10/74) issued by the ANL-W representative in conformance with requirements of the ANL-W Environment, Safety and Health manual, Section III, Chapter 10 (Ref.1). The ANL Form RED 10/74 shall be initiated by ETAS. ETAS shall, whenever possible, notify the ANL-W's representative at least 24 hours before commencing such work of the need for the permit, and the ANL-W representative will survey the construction site and issue the permit.

All cutting activities shall be conducted in an open air environment which will preclude the accumulation of flammable gases. The H&S Officer, Field Operation Officer or construction foreman will monitor all cutting operations and ensure that fire extinguishers are on hand during these operations.

### **2.3 Hoisting and Rigging**

Hoisting and rigging shall be required for removal of concrete lid, manhole and riser, concrete columns, and retaining wall. All removal activities will be conducted in accordance with Subpart T of 29 CFR 1926. Safety related to operation of the trackhoe is discussed in Section 2.1. In accordance with SC-31 of the RFP Specifications (Ref. 1), all rigging, tackle and other loading equipment shall be load tested by EG&G. Load ratings of rigging, tackle, and other loading equipment will be used by an ANL-W representative to approve a procedure for each lift used during the project. Procedures for the proper handling of electrical powered tools, such as the electrical drill are cited in Sections 2.2 and 2.5.

### **2.4 Confined Space Entry**

A confined space is defined as any space not currently used or intended for human occupancy, having a limited means of egress, which is subject to the accumulation of toxic contaminants, a



flammable or oxygen deficient atmosphere, or other hazards, such as engulfment, or electrical or mechanical hazards should equipment be inadvertently activated while a worker is in the space.

For this project, the leach pit, with the concrete lid placed on top, is specified as confined space. Should entry into the confined leach pit be needed, all activities will be conducted in accordance with the safety requirements of 29 CFR 1926.

The pit has been formed by blast excavating the basalt bedrock and the structural integrity of the native rock walls is unknown. A power assisted escape harness will be available during all of the tasks requiring pit entry. Air monitoring procedures (Section 3.5) will also be implemented to insure that an oxygen deficient or explosive atmosphere has not developed in the low lying sludge pit.

## **2.5 Electrical**

No electrical circuits need to be deenergized for personnel protection during these removal activities. Consequently, electrical safety lock-out and tagging procedures are not required. All electrical supply sources will be in full compliance with the requirements for Ground-Fault Circuit Interrupters (GCFI), as described in 29 CFR 1926.404, paragraph (b)(ii). In accordance with SC-8 of the RFP, all 110 volt equipment used by contractors will require GCFI's.

## **2.6 Noise**

Noise levels above acceptable limits for unprotected ears are anticipated when operating the trackhoe and the concrete cutting saw. All on-site personnel exposed to noise shall protect their hearing by wearing ear plugs. Operation of noise generating equipment by an individual will be less than 4 hours per day. High worker mobility between noise generating activities will also be used to reduce an individual's exposure to noise. It is unlikely that any one

employee shall be exposed to an 8-hour time weighted average (TWA) of 85 decibels. The TWA noise level equal to or greater than 85 decibels is required to involve a monitoring program.

Noise levels during operation of the cutting of the cement and suctioning of the sludge are expected to exceed 85 dB. Noise levels will be monitored by ANL-W Industrial Hygienist for proper personnel protection.

## **2.7 Temperature**

Remedial activities are anticipated to be conducted during the month of August, therefore there exists the potential of heat stress. A limited number of ice jackets may be available from ANL-W to reduce the effect of heat stress. The H&S Officer will continually evaluate the worker's condition using the heat stress work limit guidelines provided in Appendix A. Where possible, a buddy system will be utilized. Verbal communications and visual observation of work practices will be used to assess the status of the workers.

### **3.0 Hazardous Waste Operation Safety**

#### **3.1 On-Site Control**

Control boundaries for the hazardous waste operation shall be established by the H&S Officer in conjunction with the ANL-W representatives. The boundaries will separate the field operation area into three zones: the Exclusion Zone, the Contamination Reduction Zone and the Support Zone.

The Exclusion Zone includes the leach pit with a corridor extending to the temporary waste storage area. This zone is considered to be a contamination area and personnel are required to wear PPE in this area.

The Contamination Reduction Zone is a transition area that surrounds the Exclusion Zone, and is located between the Exclusion Zone and the Support Zone. A designated portion of this zone will serve as an area for personnel and equipment decontamination. The remaining portion of this zone may serve as a staging area for construction equipment, such as a flat bed truck, a trackhoe, etc. and a temporary rest area for workers.

The Support Zone is the area outside the Contamination Reduction Zone and is considered to be free of contamination. It may contain the support trailer, command post, vehicle parking, additional staging equipment, or any support activity related to the task at hand. Portions of the Support Zone will extend into the area between the inner and outer fence. This portion of the Support Zone will provide access for the safe loading of materials with fixed contamination. PPE is not required in this area.

### 3.2 Personal Protective Equipment

Personnel may be exposed to chemical contamination. The contaminants will be in the form of particulate matter. The primary routes of exposure are through inhalation, ingestion and absorption through the skin and eyes. No organic vapors are expected. Under these conditions Level C PPE with a full face respirator equipped with a HEPA filter will be required. Level C PPE consists of 1 pair of cotton medical scrubs, 1 Tyvek Suit with hood, 1 pair of vinyl or latex boots, 2 pairs of shoe covers (1 of which is vinyl or latex), 1 pair of cotton glove liners, 1 pair of latex gloves, and ear plus as directed by ANL-W Industrial Hygienist. A guideline for donning PPE is provided in Appendix B. The PPE requirements will be modified to protect the wearer from the hazards of the activity. For example during activities involving the potential of contaminated splashing fluids, the PPE will include a water resistant Tyvek suit. The PPE for all activities inside the leach pit will include outer, thick rubber soled boots to withstand the abrasive nature of the basalt floor. Several remedial activities and the corresponding modifications to the basic Level C PPE are listed below. It should be noted that levels of protection may be upgraded or downgraded, as appropriate. Any upgrade or downgrade in PPE shall be subject to ANL-W approval. Monitoring by the H&S Officer will be performed to determine the appropriate level of protection.

<u>ACTIVITY</u>	<u>MODIFICATION</u>
Sludge Removal	Water resistant Tyvek
Cutting concrete	Water resistant Tyvek, leather gloves, knee pads and ear plugs
Grout mixing	Water resistant Tyvek
Leach Pit Activities	Water resistant Tyvek and Thick- soled rubber boots

In addition to the above PPE, all on-site workers shall be required to wear safety shoes and a hardhat (if compatible with the full-face respirator).

### **3.3 Personnel Decontamination**

During this project, the chemical decontamination procedures shall be modified to satisfy the requirements of radiological decontamination. Upon exiting the Contamination Zone, personnel will perform decontamination according to the procedure specified in Appendix C.

### **3.4 Personnel Monitoring**

Level C PPE with a full-face respirator with HEPA provides sufficient protection from the inhalation, ingestion, or absorption of PCB and heavy metals. Should additional personnel monitoring for hazardous substance be required by ANL-W, the monitoring program shall use a radioactive material, such as cesium-137 as an indication of particulate hazardous material. Particulate material can be captured by a portable air monitoring unit utilizing a filter and a constant volume pump. The apparatus would be carried by a select individual. Cesium-137 analysis would be provided by ANL-W. The analytical data from the sludge (Golder, Ref. 1) for cesium-137 and hazardous materials, such as arsenic, beryllium, and PCBs could be used to estimate the concentration of hazardous materials.

### **3.5 Ambient Air Monitoring**

As a precaution, the ambient air in the pit will be monitored by ANL-W for explosive constituents prior to the drilling and sawing of the concrete lid. The pit atmosphere will be monitored without a manned entry by extending a long sampling tube from the surface to the bottom of the pit, through the manhole. Response time of the monitoring instrument will be determined from the volume of the sampling tube and the pumping rate specified by the manufacturer.

No anticipated activities will be conducted inside an enclosed area. Work activities will be conducted either on the ground surface, on top of the leach pit concrete lid, or inside the leach pit after the concrete lid has been removed exposing a large opening to the atmosphere. Ambient air monitoring, therefore, will not be necessary. However, should circumstances change and require personnel to enter the leach pit with the concrete lid in place, the OSHA requirement on confined space entry (Section 2.4) will be satisfied. Based on the chemical analysis of the sludge by Golder (Ref. 1), neither HCN nor H<sub>2</sub>S gases are anticipated at the surface or inside the pit.

Heavy gases, if any, may accumulate in the subsurface leach pit and reduce the level of oxygen in the leach pit. As a precaution, prior to pit entry, the pit atmosphere will be monitored by equipment provided by ANL-W for oxygen content and explosive atmosphere content without a manned entry. Monitoring will be performed by ANL-W or ETAS Health and Safety Officer via a long sampling tube, extended from the surface down to the bottom of the pit.

The following procedure will be used to determine if hazardous materials escape the control area as airborne particulate matter. A particulate matter collection station will be situated near the support trailer and downwind from the leach pit. The station shall have a particulate matter collection saucer, situated near ground level. The saucer may contain a collection filter, supplied by ANL-W, identical to those used for personnel monitoring. The filter would be analyzed for cesium-137 (by ANL-W), and the hazardous material content assessed in the manner described in Section 3.4. Filters and the hazardous material collected prior to removal of the pit cover would provide background data. Filters collected during removal activities would be used to assess contaminant levels.

### **3.6 Action Levels**

Personnel in level C PPE are properly attired for protection from the inhalation, ingestion and absorption of the PCBs and heavy metals at the concentration levels found in the sludge. Consequently, there are now new action levels for these contaminants. If the oxygen content inside the leach pit decreases to below the atmospheric level of 19.5% or if an explosive atmosphere is detected, forced air will be used to ventilate the pit. Should ventilation fail to establish a safe atmosphere, special approval and verbal authorization from both ETAS and ANL-W project managers will be required before a manned entry is attempted with PPE upgraded to pressure demand supplied air. The verbal authorization will be confirmed by a written Field Change Authorization form.

## **4.0 Radiological Safety**

### **4.1 Onsite Control**

The radiological control boundaries shall also be established in conjunction with the control boundaries for hazardous waste operations. These boundaries will be established by the designed ANL-W HP technician..

### **4.2 Personal Protective Equipment**

The area of work is classified as a "Soil Contamination Radiation Area". Subsurface contamination results in a exposure of less than 50 mrem/hr and probably an average of 20 mrem/hr. Under these conditions it is anticipated that Level II PPE will be used. Level II PPE is consistent with the Level C PPE selected for the hazardous waste PPE (Section 3.2). Radiological PPE will be designated, in accordance with the radiological hazards for each field activity, by ANL-W HP personnel.

### **4.3 Personnel Decontamination**

Personnel donning procedures and doffing requirements with respect to radiological concerns are specified in Appendix B and C. Radiation Work Permit shall be posted at the egress area. These procedures will be established by ANL-W HP personnel.

### **4.4 Personnel Monitoring**

The requirements for personnel monitoring for radiation exposure will be established by ANL-W HP personnel. It is expected that pocket dosimeters will be issued to all on-site workers that work in the contamination zone. Pocket dosimeter reading will be used to assess



the radiological exposure of each activity. Each worker is expected to inspect his pocket dosimeter at hourly intervals to determine if he is approaching his daily dose. Each worker will inspect his pocket dosimeter and report the reading to the HP technician. The HP technician will record the values on the radiation work permit. ANL-W will conduct full body counts of all project personnel prior to and upon completion of project.

#### **4.5 Ambient Air Monitoring**

It is expected that the ANL-W HP technician will monitor the environment for loose and airborne radiation at the frequency prescribed by ANL-W protocol. It is also expected that the HP technician will provide constant monitoring during the waste sludge solidification activity.

#### **4.6 Action Levels**

All personnel will be limited to 120 mR/person/day, or not to exceed 500 mR/person/month (Ref. 4). If personnel receive the maximum dose limits, the person must leave the area of exposure for the remainder of the day. Should ETAS believe it necessary to exceed these limits, then ETAS will notify ANL-W so that necessary provisions can be made.

## **5.0 Health and Safety Plan Implementation**

### **5.1 Personnel and Responsibilities**

Dr. T. Y. Richard Lo, the Project Manager, will be responsible for the overall safety aspects of this project. He will appoint a competent Health and Safety (H&S) Officer, Dr. Stanley A. Heath, to act on his behalf. The H&S Officer will ensure overall safety of the on-site worker during the field operations. In this capacity, the H&S Officer will initially confer with the Field Operation Officer, construction foreman and the Quality Assurance Officer to identify all the health and safety aspects involved with remedial construction activities, waste handling and sampling activities. For field operations, the H&S Officer will be responsible for setting up a trailer for PPE and OSHA protective clothing supply, personnel decon facilities and maintenance and calibration of H&S monitoring equipment. During field operation, the H&S Officer will be responsible for implementation of the H&S Plan and provide the needed H&S monitoring. The H&S Officer will work closely with ANL-W's Health Physics (HP) department to ensure radiation safety with adequate anti-C protective clothing to prevent radiation contamination. The H&S Officer will coordinate his activities with ANL-W personnel to ensure that either the H&S Officer or an ANL-W approved delegate will be on site 100% of the time during the removal activity.

The Field Operation Officer, Mr. Andrew DuBose will act on the behalf of the H&S Officer to ensure that all construction work is performed in compliance with all construction related safety requirements specified in Section 2.0. In this capacity, the Field Operation Officer shall work closely with the H&S Officer and the construction foreman to develop a construction strategy which incorporates the philosophy of ALARA and OSHA safety into the planning process. In the field, he shall ensure that all construction aspects of the H&S plan are implemented.

The H&S Officer will also be supported by ANL-W's Health Physics (HP) and Industrial Hygiene (IH) departments to ensure proper implementation of the radiological and hazardous waste aspects of the H&S plan. A full time, on-site HP technician is expected to be assigned to the project by ANL-W for the duration of the field operations. ANL-W's IH shall be made available on an as needed basis.

## **5.2 Supporting Facilities and Equipment**

Supporting facilities, including a trailer, a potable water supply, washing facilities, and a portable toilet shall be supplied by ETAS or its subcontractor. The trailer will be used for donning PPE. Portable water and washing facilities will be housed in the support trailer. The trailer and the portable toilet will be located in the designated support zone. Waste water from these facilities will be collected and drummed for subsequent disposal. Prior to disposal, each drummed container will be surveyed for radioactivity by an ANL-W HP tech. The results of the survey will determine if the water can be disposed of in a sanitary sewer or disposed of as low level radioactive waste. ETAS will work closely with ANL-W personnel to ensure that these two wastes are disposed of according to ANL-W protocol.

Personnel will be briefed on the location of on-site emergency equipment. The following equipment will be on hand at all times:

- Fire extinguisher (ABC type)
- First aid kit for minor cuts, scrapes, bruises, etc.
- Eye wash kit
- Clean water and hand soap
- 2-way radio on ANL-W network

## **5.3 Field Change Procedure**

All work activities shall be performed in accordance with the guidelines specified in the Technical

Plan (Ref. 2). Should a change be required, verbal authorization from both ETAS and ANL-W's project manager is required prior to making the change, followed by written approvals by other ANL-W personnel. A Field Procedure Change Authorization form is provided in Appendix D.

#### **5.4 Pre-job Debriefing and Special Instructions**

*This Section Is To Be Posted At The Support Trailer*

The field operations involve the potential for both radiological and chemical contamination. It is possible that both external ( $\gamma$ ) and internal ( $\alpha$  and  $\beta$ ) radiological hazardous may exist, but inhalation and ingestion of contaminated materials (i.e. internal hazards) are of primary concern. The potential hazards on this project warrant diligent adherence to the monitoring procedures/action levels, personal protective clothing levels, decontamination procedures, and personnel hygiene guidelines discussed herein.

Employees shall not eat, drink, smoke or use any tobacco product in the work area or any area where equipment and/or samples are handled or stored. Employees must wash their hands prior to eating or smoking and should take a shower at the earliest opportunity upon leaving the work area.

Refer to H&S Officer for specific concerns for each individual site activities. Do not climb over/under obstacles. Always employ the buddy system. The wearing of contact lenses is not allowed on-site at any time. Practice contamination avoidance, on and off-site. Plan activities ahead of time. Use caution in regard to pedestrian and vehicular traffic from surrounding locations. Be alert to your own physical condition. Watch your body for signs of fatigue, exposure, etc. A work/rest regime will be initiated when ambient temperatures and protective clothing create a potential heat stress situation. No work will be conducted in the dark or without appropriate supervision. Be aware of the location of on-site emergency equipment. Know your Health and Safety Plan.

## 6.0 Emergency Response

*This Section Is To Be Posted At The Support Trailer.*

Nearest Telephone: Hand held radio, supplied by ANL-W, for communication with Security.

Response to emergencies at the work site will be coordinated between the Emergency Response Coordinator (ERC), Dr. Stanley A. Heath, and/or the ANL-W HP representatives. When reporting an emergency, include the nature of the emergency, the specific location, the number of persons injured, and the nature of the injuries. In emergencies that require immediate evacuation, such as fires, explosions, or other catastrophic events, personnel on the site shall be notified by the ERC and/or ANL-W representatives by radio or using the horns on vehicles at the site. Personnel inside the exclusion zone will be immediately informed by a person outside of the zone and will evacuate at once. Decontamination will be secondary to evacuating the site in a timely fashion. All personnel will meet in the support zone and await instructions from the ERC and/or ANL-W representatives.

### 6.1 ANL-W Emergency Procedures

If a **STEADY SIREN** from ANL-W sounds, personnel are to take cover in the take cover areas designated by the ANL-W HP technician or the ERC.

The **ALTERNATING SIREN** at ANL-W indicates that personnel must evacuate the facility. On-site workers will be directed by either the ANL-W HP technician or the designated ERC, to evacuation buses. Separate buses will be provided by ANL-W for personnel in anti-C clothing.

## **6.2 Fire and Explosion**

In the event of a fire or explosion:

- Notify ANL-W Emergency Personnel by calling security with hand held radio supplied by ANL-W.
- Control the spread of fire if it can be done safely.
- Evacuate the area.

## **6.3 Adverse Weather Conditions**

In the event of adverse weather conditions, the Health and Safety Officer will determine if work can continue without sacrificing the health and safety of all field workers. Some of the items to be considered by the Health and Safety Officer prior to determining if work should continue are:

- Potential for heat stress
- Treacherous weather-related working conditions
- Limited visibility
- Potential for electrical storms
- Unexpected contamination.

## **6.4 Radiation and/or Chemical Exposure**

Site workers must notify the site Health and Safety officer and the ANL-W HP technician immediately in the event of any injury or any of the signs or symptoms of overexposure to contamination identified below:

<u>Potential Hazard</u>	<u>Symptoms of Acute Exposure</u>	<u>First Aid</u>
Possible radioactive contamination or hazardous chemical exposure to PCBs or unexpected volatile organic vapors.	Light headedness, dizziness nausea, confusion, headache, vomiting, unconsciousness	Get victim to fresh air and to physician for medical consultation/exam as soon as possible if conscious and stable. If victim is unconscious, administer first aid while another worker calls for emergency medical assistance. Medical care for serious illness will not be delayed for decontamination.
Heat Stress	Light headedness, dizziness nausea, confusion, headache, vomiting, unconsciousness, slurred speech weak, disoriented, stupor	Get victim to fresh air and to physician for medical consultation/exam as soon as possible if conscious and stable. If victim is unconscious, administer first aid while another worker calls for emergency medical assistance. Medical care for serious illness will not be delayed for decontamination.

## 6.5 Onsite Injury or Illness

In the event of an injury requiring more than minor first aid, or any employee reporting any sign or symptom of exposure to hazardous substances, immediately take the victim to dispensary located at Bldg. 752. In the event of life-threatening or traumatic injury, implement appropriate first-aid and immediately call for emergency medical assistance using the 2-way radio. The nearest designated trauma center is Eastern Idaho Regional Medical Center located at Idaho Falls, phone 529-6000. If the accident or injury is serious, then all work activities should cease until an evaluation can be made to prevent a possible recurrence.

## 7.0 References

1. ANL-W, "Specifications for EBR-II Leach Pit Sludge Removal Project at Argonne National Laboratory-West," Document No. W7630-0001-ES, Argonne National Laboratory-West, INEL, Idaho Falls, Idaho, March 15, 1993.
2. EPA, 1991, *Development of Risk-Based Preliminary Remediation Goals*, OSWER, Directive 9285.701B, December 13, 1991, Human Health Evaluation Manual, Part B, U. S. Environmental Protection Agency, 1991.
3. ETAS Corporation, "Technical Work Plan, Sludge Removal and Solidification, EBR-II Leach Pit - Operable Unit 9-02", August 16, 1993.
4. ANL-W, "Radiological Control Manual, Argonne National Laboratory-West," December 3, 1992.